



# National Weather Service

## Storm Data and Unusual Weather Phenomena



September 2005

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b><u>IOWA, Central</u></b>									
<b>Emmet County</b>									
1 N Armstrong	08	0830CST			0	0	3K	5K	Hail(1.00)
<b>Pocahontas County</b>									
Havelock	08	0939CST			0	0	5K		Thunderstorm Wind (EG52)
<b>Calhoun County</b>									
5 N Rockwell City	08	1010CST			0	0	5K		Thunderstorm Wind (EG52)
<b>Humboldt County</b>									
10 WSW Humboldt	08	1015CST			0	0	2K		Thunderstorm Wind (EG50)
<b>Calhoun County</b>									
Farnhamville	08	1024CST			0	0	5K	5K	Thunderstorm Wind (MG54)
<b>Calhoun County</b>									
5 SSE Knierim	08	1025CST			0	0	5K	2K	Thunderstorm Wind (EG52)
<b>Webster County</b>									
Ft Dodge	08	1030CST			0	0	5K		Thunderstorm Wind (EG52)
<b>Greene County</b>									
Paton	08	1050CST			0	0	10K	5K	Thunderstorm Wind (EG54)
<b>Boone County</b>									
1 ESE Boone	08	1120CST			0	0	3K		Thunderstorm Wind (EG50)
<b>Boone County</b>									
Madrid	08	1130CST			0	0	5K	5K	Thunderstorm Wind (EG54)
<b>Boone County</b>									
Madrid	08	1130CST			0	0	5K		Thunderstorm Wind (MG54)
<b>Story County</b>									
Ames	08	1130CST			0	0	5K		Thunderstorm Wind (EG57)
<b>Story County</b>									
Ames	08	1130CST	0.7	75	0	8	150K		Tornado (F1)
A tornado touched down in the central Campas Area of ISU. Eight injuries occurred, one serious enough to require hospitalization.									
<b>Boone County</b>									
Madrid	08	1135CST			0	0	3K		Thunderstorm Wind (EG52)
<b>Story County</b>									
Ames	08	1135CST			0	0	10K	5K	Thunderstorm Wind (MG72)
<b>Story County</b>									
Ames	08	1136CST			0	0	15K		Thunderstorm Wind (MG71)
<b>Dallas County</b>									
3 E Bouton	08	1145CST			0	0	3K		Thunderstorm Wind (EG52)
<b>Polk County</b>									
3 NW Alleman	08	1145CST			0	0	3K	5K	Hail(1.00)
<b>Polk County</b>									
3 NW Alleman	08	1145CST			0	0	2K		Thunderstorm Wind (EG52)
<b>Polk County</b>									
2 SW Ankeny	08	1150CST			0	0	2K		Thunderstorm Wind (EG52)
<b>Polk County</b>									
4 E Ankeny	08	1151CST			0	0	15K	10K	Thunderstorm Wind (MG72)
<b>Polk County</b>									
5 NW Ankeny	08	1155CST			0	0	20K	5K	Thunderstorm Wind (EG61)
<b>Polk County</b>									
Ankeny	08	1155CST			0	0	10K	10K	Thunderstorm Wind (MG65)



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<b><u>IOWA, Central</u></b>									
Polk County									
Altoona	08	1157CST			0	0	15K	5K	Thunderstorm Wind (EG57)
Polk County									
5 NW Des Moines	08	1157CST			0	0	1K		Hail(0.88)
Polk County									
2 W Elkhart	08	1200CST			0	0	10K	10K	Hail(1.75)
Jasper County									
Colfax	08	1210CST			0	0	5K		Thunderstorm Wind (EG52)
Marshall County									
Marshalltown	08	1210CST			0	0	10K		Thunderstorm Wind (EG52)
Polk County									
3 S Altoona	08	1210CST			0	0	5K	5K	Thunderstorm Wind (EG61)
Polk County									
Pleasant Hill	08	1210CST			0	0	15K	5K	Hail(1.50)
Jasper County									
Baxter	08	1215CST			0	0	10K	5K	Thunderstorm Wind (EG57)
Warren County									
Hartford	08	1225CST			0	0	2K	5K	Hail(0.88)
Warren County									
Hartford	08	1225CST			0	0	3K		Thunderstorm Wind (EG52)
Warren County									
Hartford	08	1230CST			0	0	5K	3K	Thunderstorm Wind (EG57)
Marion County									
Knoxville	08	1235CST			0	0	5K	3K	Thunderstorm Wind (EG55)
Poweshiek County									
Grinnell	08	1245CST			0	0	5K		Thunderstorm Wind (EG52)
Poweshiek County									
Brooklyn	08	1305CST			0	0	5K		Thunderstorm Wind (EG52)
Poweshiek County									
Brooklyn	08	1307CST			0	0	5K		Thunderstorm Wind (MG52)
Monroe County									
2 W Lovilia	08	1315CST			0	0	3K		Thunderstorm Wind (EG52)
IAZ073									
Warren	08	1320CST 1420CST			0	0	10K		Flood
Mahaska County									
Keomah	08	1330CST			0	0	3K		Thunderstorm Wind (EG50)

A nearly stationary front extended east-southeast to west-northwest across Iowa. Cooler and drier air was to the north of the front, with very warm and unstable air to the south. Dew point temperatures approached 70 to the south of the boundary during the morning hours of the 8th. A short wave tracked southeast across the area in a general northwest flow. The air mass became quite unstable in the vicinity of the boundary with lifted indices around -7 C. The shear profile was favorable with about 40 kts of shear in the lower layers. Plenty of deep moisture was available with the system with precipitable water values in the 1.5 to 1.8 inch range. Hail was somewhat limited with the storms, but not absent with freezing levels in the 12,500 to 13,000 foot range. CAPE values ahead of the storms were in the 1500 to 2000 J/kg range, with CAPE in the -10 C to -30 C layer of the atmosphere in the 400 J/kg range. Thunderstorms which began well to the northwest during the previous night tracked southeast into Iowa during the morning of the 8th. A steady flow of moisture was transported into the area with a feed at 850 mb of about 25 kts. The storms were fast moving and the area tended to bow out. Wind damage was wide spread with numerous reports of winds of 60 to 70 MPH. An intense cluster of storms moved through the central Iowa area with measured wind gusts of 83 MPH reported at both Ames and Ankeny with the gust front passage. There was one reported tornado with the system in Ames. The tornado touched down near the power plant on the ISU Campus. Eight people were injured by the tornado. One was injured seriously enough to be taken to hospital. Initial damage estimates were around \$150,000. Many of the storms produced hail, however much of the hail was below



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### IOWA, Central

severe limits. Reports of penny size hail were received from several locations. The largest hail came with the cluster in central Iowa. Golf ball size hail fell west of Elkhart in Polk County. The storm and high winds resulted in power outages to 8700 customers in the Des Moines area. The high winds caused a semi-tractortrailer and a camper to overturn on Interstate 80 just west of exit 141 in Polk County. The thunderstorms also produced locally heavy rainfall. Local flooding occurred on the north side of Indianola as the storms moved through.

<b>Ringgold County</b>									
1 N Diagonal	13	0514CST			0	0	5K		Hail(0.75)
<b>Ringgold County</b>									
3 NNW Beaconsfield	13	1038CST			0	0	1K	5K	Hail(0.88)
<b>Cass County</b>									
5 S Cumberland	13	1150CST			0	0	5K		Hail(0.75)
<b>Bremer County</b>									
Waverly	13	1335CST			0	0	5K		Thunderstorm Wind (EG61)
<b>Butler County</b>									
Clarksville	13	1336CST			0	0	5K	5K	Thunderstorm Wind (MG67)
<b>Bremer County</b>									
Plainfield	13	1338CST			0	0			Thunderstorm Wind (MG50)
<b>Bremer County</b>									
Waverly	13	1339CST			0	0	5K		Thunderstorm Wind (MG59)
<b>Bremer County</b>									
Plainfield	13	1340CST			0	0	150K	25K	Thunderstorm Wind (MG90)
<b>Butler County</b>									
2 N Shell Rock	13	1343CST			0	0	3K	5K	Thunderstorm Wind (EG61)
<b>Bremer County</b>									
Plainfield	13	1400CST			0	0	35K	5K	Thunderstorm Wind (EG61)
<b>Appanoose County</b>									
Centerville	13	1852CST			0	0	5K	10K	Hail(1.00)
<b>Wapello County</b>									
Chillicothe	13	1938CST			0	0	2K	5K	Hail(0.88)

A strong cold front and upper level trough of low pressure pushed southeast into the central U.S. during the evening of the 12th into the day of the 13th. The situation was somewhat complicated by several rounds of convection. During the previous night, a wave of low pressure lifted northeast along the front through southeast South Dakota into southwest Minnesota. An area of severe thunderstorms occurred with this wave. An outflow boundary pushed southeast from the cluster of storms. It was evident by 1000 UTC to 1100 UTC on the Slater Profiler as the 850 mb winds shifted to the northwest at 30 to 40 kts. The outflow boundary arched northeast to southwest through the state. Thunderstorms fired along this boundary before sunrise and dropped penny size hail in Ringgold County. In the meantime, the coldfront was slowing down as another wave formed along it in Kansas. A 50 kt jet was evident at 850 mb pushing northeast out of Kansas into Iowa. The environment during the day on the 13th showed a lifted index around -6 C. with shear values around 45 kts. There was moderate instability with 1500 to 2500 J/kg present. The freezing level was in the 13,500 to 14,000 foot range across the southeast half of the CWA. The shear that was present was mainly in the form of speed shear as the profile was quite unidirectional. Numerous thunderstorms formed throughout the day on the 13th and continued into the evening hours. The storms remained below severe limits for the most part, but did occasionally break through with high winds and some hail. Spotty reports of three quarter to one inch diameter hail were received. One inch diameter hail covered Iowa Highway 5 near Centerville. A cluster of storms produced high winds as it raced northeast across the northeast part of the CWA. Winds of 60 to over 75 MPH were reported with these cells. A wind speed of 77 MPH was measured in Butler County. The high winds blew down a barn in Bremer County near Plainfield. There was extensive damage in the Plainfield area to both trees and buildings as a second wind gust swept through the area. The schoolnet site in Plainfield measured a wind gust of 103 MPH with the storm.



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### IOWA, Central

<b>Butler County</b>									
5 S Greene	18	2256CST			0	0	2K	5K	Hail(1.00)
<b>Cass County</b>									
Anita	18	2257CST			0	0	1K	5K	Hail(0.88)
<b>Butler County</b>									
8 N Clarksville	18	2305CST			0	0	2K	5K	Hail(1.00)
<b>Audubon County</b>									
7 E Brayton	18	2306CST			0	0	1K	5K	Hail(0.88)
<b>Guthrie County</b>									
4 W Guthrie Center	18	2341CST			0	0	2K	5K	Hail(1.00)
<b>Audubon County</b>									
4 NW Brayton	19	0010CST			0	0	1K	5K	Hail(0.88)
<b>Guthrie County</b>									
9 WSW Guthrie Center	19	0023CST			0	0		5K	Hail(0.75)

A frontal boundary extended from the upper Great Lakes, southwest into Iowa and into low pressure over Kansas on the afternoon of the 18th. Warm and moist air was drawn north ahead of the frontal boundary with surface temperatures in the mid 80s to low 90s and dew points in the low 70s pushing toward Iowa. By the evening hours the air mass had become quite unstable with lifted indices near -8 C. and CAPE values in the 2500 to 4000 J/kg range. Strong shear was present with a zero to 6 km shear approaching 60 kts. The air mass was capped during the early evening, which limited development. By the late evening hours there were two factors that set the stage for severe thunderstorm development. A warm frontal boundary aloft extended northwest to southeast across Iowa, providing the focus for thunderstorms across northern Iowa. Meanwhile, a strong low level jet of 40 to 50 kts developed ahead of the cold front as the low in Kansas lifted northeast into southeast Minnesota. Two MCS's moved into Iowa, one over the northwest, the other over the southwest part of the state. Both were severe and produced hail up to an inch in diameter. As they progressed east, the warm front aloft lit up with scattered reports of three quarter to one inch diameter hail along it. Additional storms formed over southeast Iowa on the nose of the low level jet. As the evening unfolded, the dry slot lifted northeast into Iowa from the southwest. The southern storms weakened rapidly, while the northern storms became more multi-cellular. Rainfall across the northern part of the state was in the 1 to 3 inch range, causing some local street flooding.

### IAZ004>005

<b>Emmet - Kossuth</b>									
25	2200CST				0	0	50K	100K	Flood
30	2359CST								

Although the statewide average precipitation was almost exactly normal, the distribution of the precipitation was not. Very dry weather prevailed over southern, and particularly, southwestern Iowa. Glenwood recorded only 0.10 inches of rain for the month. This is their lowest September total among 124 years of records (previous low of 0.43 inches in 1888). Meanwhile, very wet weather was the rule for parts of northern Iowa. Mason City Airport reported 9.54 inches of rain for the month. This was their second highest September rain total among 64 years of record (14.41 inches in 1965 is their September record). Streamflow was seasonal across most of Iowa in September, with the exception of elevated levels along the Des Moines Cedar and Iowa basins at the end of the month. Heavy rains across northern Iowa pushed streamflow up at the end of the month and the effects would bring about minor flooding along the Des Moines and Cedar River Basins near at the end of the month. The heaviest rains fell over Southern Minnesota, which was a major contributor to the flooding in the Des Moines River Basin. Rivers across southern Iowa would remain reasonable and show little effect from rains in the north.